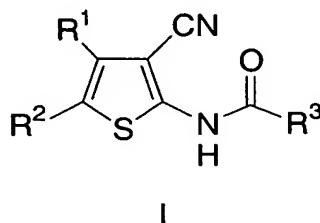


WHAT IS CLAIMED IS:

1. A method of treating type 2 diabetes mellitus in a mammalian patient in need of such treatment, comprising administering to the patient an anti-diabetic effective amount of a compound represented by formula I:



or a pharmaceutically acceptable salt or solvate thereof wherein:

$R^1$  is selected from the group consisting of: H,  $C_{1-10}$ alkyl, Aryl, Heteroaryl and Heterocyclyl,

said alkyl, Aryl, Heteroaryl and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^2$  is selected from the group consisting of: H,  $C_{1-10}$  alkyl,  $C(O)C_{1-10}$  alkyl,  $C(O)Aryl$ ,  $C(O)Heteroaryl$ ,  $C(O)Heterocyclyl$ ,  $CO_2R^4$  and  $C(O)NR^4R^5$ ,

the alkyl, Aryl, Heteroaryl and Heterocyclyl portions of  $C(O)C_{1-10}$ alkyl,  $C(O)Aryl$ ,  $C(O)Heteroaryl$  and  $C(O)Heterocyclyl$  being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^3$  is selected from the group consisting of:  $C_{1-10}$ alkyl and Aryl, said alkyl and Aryl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^4$  is selected from the group consisting of: H,  $C_{1-10}$ alkyl, Aryl, Heteroaryl, Heterocyclyl, said alkyl, Aryl, Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^5$  is selected from the group consisting of:  $C_{1-10}$ alkyl, Aryl, Heteroaryl and Heterocyclyl, said alkyl, cycloalkyl, Aryl Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

when  $R^2$  represents  $C(O)C_{1-10}$ alkyl, each  $R^6$  is independently selected from the group consisting of: halo, Aryl, Heteroaryl, Heterocyclyl,  $OR^7$ ,  $SR^7$ ,  $S(O)_mR^8$ ,  $S(O)_2OR^8$ ,  $S(O)_mNR^7R^8$ ,  $NO_2$ ,  $NR^7R^8$ ,  $O(CR^9R^{10})_nNR^7R^8$ ,  $C(O)R^8$ ,  $CO_2R^7$ ,  $CO_2(CR^9R^{10})_nCONR^7R^8$ ,  $OC(O)R^8$ ,  $CN$ ,  $C(O)NR^7R^8$ ,  $NR^7C(O)R^8$ ,  $OC(O)NR^7R^8$ ,  $NR^7C(O)OR^8$ ,  $NR^7C(O)NR^8R^9$ ,  $CR^7(NOR^8)$ ,  $(CR^9R^{10})_n$ -Aryl,  $(CR^9R^{10})_n$ -Heteroaryl,  $(CR^9R^{10})_n$ -Heterocyclyl,  $CF_3$  and  $OCF_3$ ,

and when  $R^2$  is  $C(O)Aryl$ ,  $C(O)Heteroaryl$  or  $C(O)Heterocyclyl$ , and when  $R^6$  is a substituent on  $R^3$ ,  $R^4$  and  $R^5$ , each  $R^6$  is independently selected from the group consisting of halo,  $C_{1-7}alkyl$ ,  $Aryl$ ,  $Heteroaryl$ ,  $Heterocyclyl$ ,  $OR^7$ ,  $SR^7$ ,  $S(O)_mR^8$ ,  $S(O)_2OR^8$ ,  $S(O)_mNR^7R^8$ ,  $NO_2$ ,  $NR^7R^8$ ,  $O(CR^9R^{10})_nNR^7R^8$ ,  $C(O)R^8$ ,  $CO_2R^7$ ,  $CO_2(CR^9R^{10})_nCONR^7R^8$ ,  $OC(O)R^8$ ,  $CN$ ,  $C(O)NR^7R^8$ ,  $NR^7C(O)R^8$ ,  $OC(O)NR^7R^8$ ,  $NR^7C(O)OR^8$ ,  $NR^7C(O)NR^8R^9$ ,  $CR^7(NOR^8)$ ,  $(CR^9R^{10})_n-Aryl$ ,  $(CR^9R^{10})_n-Heteroaryl$ ,  $(CR^9R^{10})_n-Heterocyclyl$ ,  $CF_3$  and  $OCF_3$ ;

wherein  $m$  is 0, 1 or 2 and  $n$  is an integer from 1 to 7, and the  $alkyl$ ,  $Heterocyclyl$ ,  $Aryl$  and  $Heteroaryl$  groups and portions are optionally substituted with 1-4 substituents selected from a group independently selected from  $R^{11}$ ;

$R^7$ ,  $R^9$  and  $R^{10}$  are independently selected from the group consisting of:  $H$ ,  $C_{1-7}alkyl$ ,  $Aryl$ ,  $Ar-C_{1-10}alkyl$  and mono-, di- and tri- halo substituted  $Ar-C_{1-10}alkyl$ ,

or one  $R^9$  and one  $R^{10}$  are taken together with the atoms to which they are attached and any intervening atoms and represent a ring of 3 to 8 members containing 0-2 heteroatoms independently selected from  $O$ ,  $S$  and  $N$ ;

$R^8$  is selected from the group consisting of:  $C_{1-10}alkyl$ ,  $Aryl$  and  $C_{1-10}alkyl-Aryl$ ; and

$R^{11}$  is selected from the group consisting of: halo,  $CN$ ,  $C_{1-4}alkyl$ ,  $Aryl$ ,  $CF_3$  and  $OH$ .

2. A method of treating type 2 diabetes in accordance with claim 1 wherein the compound administered is a compound of formula I or a pharmaceutically acceptable salt or solvate thereof wherein  $R^1$  represents  $C_{1-10}alkyl$ .

3. A method of treating type 2 diabetes mellitus in accordance with claim 2 wherein  $R^1$  represents  $C_{1-4}alkyl$ .

4. A method of treating type 2 diabetes mellitus in accordance with claim 3 wherein  $R^1$  represents methyl.

5. A method of treating type 2 diabetes mellitus in accordance with claim 1 wherein  $R^2$  is selected from the group consisting of:  $C(O)C_{1-10}$  alkyl,  $C(O)Aryl$ ,  $C(O)Heteroaryl$ ,  $C(O)Heterocyclyl$ ,  $CO_2R^4$  and  $C(O)NR^4R^5$ ,

the alkyl, Aryl, Heteroaryl and Heterocyclyl portions of  $C(O)C_{1-10}alkyl$ ,  $C(O)Aryl$ ,  $C(O)Heteroaryl$  and  $C(O)Heterocyclyl$  being optionally substituted with one to four substituents independently selected from  $R^6$ .

6. A method of treating type 2 diabetes in accordance with claim 5 wherein  $R^2$  is  $C(O)C_{1-4}alkyl$ ,  $C(O)-Aryl$ ,  $C(O)-Heteroaryl$  or  $C(O)-Heterocyclyl$ , and the  $C_{1-4}alkyl$ , Aryl, Heteroaryl and Heterocyclyl portions are optionally substituted with 1-2 groups selected from  $R^6$ ; and  $R^6$  is selected from the group consisting of: halo, Aryl, Heteroaryl, Heterocyclyl,  $OR^7$ ,  $NR^7R^8$ ,  $CF_3$  and  $OCF_3$ ; and the Aryl, Heteroaryl and Heterocyclyl portions are optionally substituted with halo,  $C_{1-4}alkyl$  and  $CF_3$ .

7. A method of treating type 2 diabetes in accordance with claim 1 wherein  $R^3$  is  $C_{1-10}alkyl$  with 0-1  $R^6$  groups attached.

8. A method of treating type 2 diabetes in accordance with claim 1 wherein  $R^4$  is H,  $C_{1-10}alkyl$  or Aryl, said alkyl and Aryl groups being optionally substituted with 1-3  $R^6$  groups

9. A method of treating type 2 diabetes in accordance with claim 1 wherein  $R^5$  is  $C_{1-10}alkyl$  having 1-2  $R^6$  groups attached.

10. A method of treating type 2 diabetes in accordance with claim 1 wherein  $R^2$  represents a member selected from the group consisting of:  $CO_2R^4$  and  $C(O)NR^4R^5$ .

11. A method of treating type 2 diabetes in accordance with claim 1 wherein:

$R^1$  represents  $C_{1-10}alkyl$ ;

$R^2$  is selected from the group consisting of:  $C(O)C_{1-10}$  alkyl,  $C(O)Aryl$ ,  $C(O)Heteroaryl$ ,  $C(O)Heterocyclyl$ ,  $CO_2R^4$  and  $C(O)NR^4R^5$ ,

the alkyl, Aryl, Heteroaryl and Heterocyclyl portions of  $C(O)C_{1-10}alkyl$ ,  $C(O)Aryl$ ,  $C(O)Heteroaryl$  and  $C(O)Heterocyclyl$  being optionally substituted with one to four substituents

independently selected from R<sup>6</sup>;

R<sup>3</sup> is C<sub>1-10</sub>alkyl with 0-1 R<sup>6</sup> groups attached;

R<sup>4</sup> is H or C<sub>1-10</sub>alkyl optionally substituted with 1-2 R<sup>6</sup> groups;

R<sup>5</sup> is C<sub>1-10</sub>alkyl having 1-2 R<sup>6</sup> groups attached;

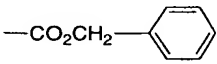
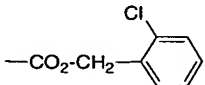
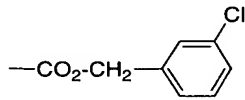
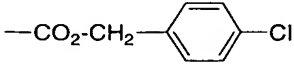
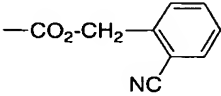
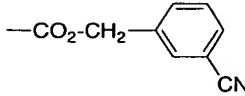
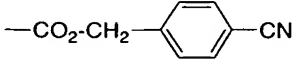
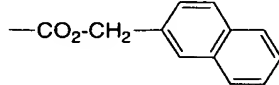
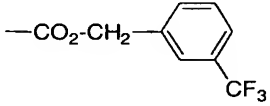
5 R<sup>6</sup> is independently selected from the group consisting of halo, C<sub>1-7</sub>alkyl, Aryl, Heteroaryl, Heterocyclyl, OR<sup>7</sup>, CN, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Aryl, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Heteroaryl, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Heterocyclyl, CF<sub>3</sub> and OCF<sub>3</sub>;

wherein n is an integer from 1 to 3, and the alkyl, Aryl, Heteroaryl and Heterocyclyl groups and portions are optionally substituted with 1-2 substituents selected from a group independently selected from R<sup>11</sup>;

10 R<sup>7</sup>, R<sup>9</sup> and R<sup>10</sup> are independently selected from the group consisting of: H, C<sub>1-7</sub>alkyl, Ar-C<sub>1-10</sub>alkyl and mono-, di- and tri- halo substituted Ar-C<sub>1-10</sub>alkyl, and

R<sup>11</sup> is selected from the group consisting of: halo, CN, C<sub>1-4</sub>alkyl, Aryl, CF<sub>3</sub> and OH.

15 12. A method of treating type 2 diabetes in accordance with claim 11 wherein:  
R<sup>1</sup> represents methyl;  
R<sup>3</sup> represents C<sub>1-10</sub>alkyl, and R<sup>2</sup> is selected from the table below:

R <sup>2</sup>		
CH <sub>3</sub>	CO <sub>2</sub> Et	CO <sub>2</sub> -t-Bu
		
		
		


13. A method of treating type 2 diabetes mellitus in accordance with claim 1 wherein the compound administered is selected from the group consisting of:

N-(3-cyano-4,5-dimethylthien-2-yl)cyclohexanecarboxamide;

5 isopropyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-carboxylate;

tert-butyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-carboxylate;

tert-butyl 4-cyano-5-[(cyclobutylcarbonyl)amino]-3-methylthiophene-2-carboxylate;

10 tert-butyl 4-cyano-5-[(cyclopentylcarbonyl)amino]-3-methylthiophene-2-carboxylate;

tert-butyl 4-cyano-5-[(cyclohexylcarbonyl)amino]-3-methylthiophene-2-carboxylate;

tert-butyl 4-cyano-5-(isobutyrylamino)-3-methylthiophene-2-carboxylate;

15 tert-butyl 4-cyano-5-[(2,2-dimethylpropanoyl)amino]-3-methylthiophene-2-carboxylate;

benzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-carboxylate;  
 2-chlorobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 5 carboxylate;  
 3-chlorobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 carboxylate;  
 4-chlorobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 carboxylate;  
 2-cyanobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 carboxylate;  
 10 3-cyanobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 carboxylate;  
 4-cyanobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 carboxylate;  
 2-naphthylmethyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 15 carboxylate;  
 3-(trifluoromethyl)benzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-  
 methylthiophene-2-carboxylate;  
 N-benzyl-4-cyano-N-ethyl-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
 carboxamide;  
 20 4-cyano-N-cyclopentyl-5-[(2-ethylbutanoyl)amino]-N-(4-fluorobenzyl)-3-  
 methylthiophene-2-carboxamide;  
 N-benzyl-4-cyano-5-[(2-ethylbutanoyl)amino]-N,3-dimethylthiophene-2-  
 carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-N,N,3-trimethylthiophene-2-carboxamide;  
 25 N-benzyl-4-cyano-5-[(2-ethylbutanoyl)amino]-N-isopropyl-3-methylthiophene-2-  
 carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]-  
 3-methyl-N-(2-naphthylmethyl)thiophene-2-carboxamide;  
 N-(tert-butyl)-4-cyano-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-  
 30 naphthylmethyl)thiophene-2-carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-naphthylmethyl)-N-(1,2,2-  
 trimethylpropyl)thiophene-2-carboxamide;  
 4-cyano-N-cyclopentyl-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-  
 naphthylmethyl)thiophene-2-carboxamide;

4-cyano-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-naphthylmethyl)-N-(1,2,3,4-tetrahydronaphthalen-1-yl)thiophene-2-carboxamide;

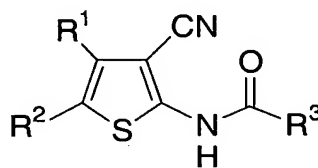
N-(tert-butyl)-4-cyano-5-[(2-ethylbutanoyl)amino]-N-(4-fluorobenzyl)-3-methylthiophene-2-carboxamide;

5 4-cyano-5-[(2-ethylbutanoyl)amino]-N-(4-fluorobenzyl)-3-methyl-N-(1,2,2-trimethylpropyl)thiophene-2-carboxamide;

4-cyano-N-(2,4-dichlorobenzyl)-5-[(2-ethylbutanoyl)amino]-N-isopropyl-3-methylthiophene-2-carboxamide, and

10 N-{3-cyano-4-methyl-5-[(4-phenylpiperidin-1-yl)carbonyl]thien-2-yl}-2-ethylbutanamide, and the pharmaceutically acceptable salts and solvates of the compounds listed above.

14. A pharmaceutical composition which is comprised of a compound of formula I:



15 I

or a pharmaceutically acceptable salt or solvate thereof wherein:

R<sup>1</sup> is selected from the group consisting of: H, C<sub>1-10</sub>alkyl, Aryl, Heteroaryl and Heterocyclyl,

20 said alkyl, Aryl, Heteroaryl and Heterocyclyl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

R<sup>2</sup> is selected from the group consisting of: H, C<sub>1-10</sub> alkyl, C(O)C<sub>1-10</sub> alkyl, C(O)Aryl, C(O)Heteroaryl, C(O)Heterocyclyl CO<sub>2</sub>R<sup>4</sup> and C(O)NR<sup>4</sup>R<sup>5</sup>,

the alkyl, Aryl, Heteroaryl and Heterocyclyl portions of C(O)C<sub>1-10</sub>alkyl, C(O)Aryl, C(O)Heteroaryl and C(O)Heterocyclyl being optionally substituted with one to four substituents

25 independently selected from R<sup>6</sup>;

R<sup>3</sup> is selected from the group consisting of: C<sub>1-10</sub>alkyl and Aryl, said alkyl and Aryl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

R<sup>4</sup> is selected from the group consisting of: H, C<sub>1-10</sub>alkyl, Aryl, Heteroaryl, Heterocyclyl, said alkyl, Aryl, Heteroaryl, and Heterocyclyl being optionally substituted with one

30 to four substituents independently selected from R<sup>6</sup>;

$R^5$  is selected from the group consisting of:  $C_{1-10}$ alkyl, Aryl, Heteroaryl and Heterocyclyl, said alkyl, cycloalkyl, Aryl Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

5 when  $R^2$  represents  $C(O)C_{1-10}$ alkyl, each  $R^6$  is independently selected from the group consisting of: halo, Aryl, Heteroaryl, Heterocyclyl,  $OR^7$ ,  $SR^7$ ,  $S(O)_mR^8$ ,  $S(O)_2OR^8$ ,  $S(O)_mNR^7R^8$ ,  $NO_2$ ,  $NR^7R^8$ ,  $O(CR^9R^{10})_nNR^7R^8$ ,  $C(O)R^8$ ,  $CO_2R^7$ ,  $CO_2(CR^9R^{10})_nCONR^7R^8$ ,  $OC(O)R^8$ ,  $CN$ ,  $C(O)NR^7R^8$ ,  $NR^7C(O)R^8$ ,  $OC(O)NR^7R^8$ ,  $NR^7C(O)OR^8$ ,  $NR^7C(O)NR^8R^9$ ,  $CR^7(NOR^8)$ ,  $(CR^9R^{10})_n$ -Aryl,  $(CR^9R^{10})_n$ -Heteroaryl,  $(CR^9R^{10})_n$ -Heterocyclyl,  $CF_3$  and  $OCF_3$ ,

10 and when  $R^2$  is  $C(O)$ Aryl,  $C(O)$ Heteroaryl or  $C(O)$ Heterocyclyl, and when  $R^6$  is a substituent on  $R^3$ ,  $R^4$  and  $R^5$ , each  $R^6$  is independently selected from the group consisting of halo,  $C_{1-7}$ alkyl, Aryl, Heteroaryl, Heterocyclyl,  $OR^7$ ,  $SR^7$ ,  $S(O)_mR^8$ ,  $S(O)_2OR^8$ ,  $S(O)_mNR^7R^8$ ,  $NO_2$ ,  $NR^7R^8$ ,  $O(CR^9R^{10})_nNR^7R^8$ ,  $C(O)R^8$ ,  $CO_2R^7$ ,  $CO_2(CR^9R^{10})_nCONR^7R^8$ ,  $OC(O)R^8$ ,  $CN$ ,  $C(O)NR^7R^8$ ,  $NR^7C(O)R^8$ ,  $OC(O)NR^7R^8$ ,  $NR^7C(O)OR^8$ ,  $NR^7C(O)NR^8R^9$ ,  $CR^7(NOR^8)$ ,  $(CR^9R^{10})_n$ -Aryl,  $(CR^9R^{10})_n$ -Heteroaryl,  $(CR^9R^{10})_n$ -Heterocyclyl,  $CF_3$  and  $OCF_3$ ;

15 wherein  $m$  is 0, 1 or 2 and  $n$  is an integer from 1 to 7, and the alkyl, Heterocyclyl, Aryl and Heteroaryl groups and portions are optionally substituted with 1-4 substituents selected from a group independently selected from  $R^{11}$ ;

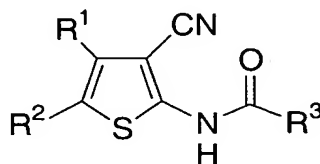
$R^7$ ,  $R^9$  and  $R^{10}$  are independently selected from the group consisting of: H,  $C_{1-7}$ alkyl, Aryl, Ar- $C_{1-10}$ alkyl and mono-, di- and tri- halo substituted Ar- $C_{1-10}$ alkyl,

20 or one  $R^9$  and one  $R^{10}$  are taken together with the atoms to which they are attached and any intervening atoms and represent a ring of 3 to 8 members containing 0-2 heteroatoms independently selected from O, S and N;

$R^8$  is selected from the group consisting of:  $C_{1-10}$  alkyl, Aryl and  $C_{1-10}$ alkyl-Aryl; and

25  $R^{11}$  is selected from the group consisting of: halo, CN,  $C_{1-4}$ alkyl, Aryl,  $CF_3$  and OH in combination with a pharmaceutically acceptable carrier.

30 15. A method of preventing or delaying the onset of type 2 diabetes mellitus in a mammalian patient in need thereof, comprising administering to said patient a compound of formula I:



or a pharmaceutically acceptable salt or solvate thereof wherein:

$R^1$  is selected from the group consisting of: H,  $C_{1-10}$ alkyl, Aryl, Heteroaryl and Heterocyclyl,

said alkyl, Aryl, Heteroaryl and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^2$  is selected from the group consisting of: H,  $C_{1-10}$  alkyl,  $C(O)C_{1-10}$  alkyl,  $C(O)Aryl$ ,  $C(O)Heteroaryl$ ,  $C(O)Heterocyclyl$   $CO_2R^4$  and  $C(O)NR^4R^5$ ,

the alkyl, Aryl, Heteroaryl and Heterocyclyl portions of  $C(O)C_{1-10}$ alkyl,  $C(O)Aryl$ ,  $C(O)Heteroaryl$  and  $C(O)Heterocyclyl$  being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^3$  is selected from the group consisting of:  $C_{1-10}$ alkyl and Aryl, said alkyl and Aryl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^4$  is selected from the group consisting of: H,  $C_{1-10}$ alkyl, Aryl, Heteroaryl, Heterocyclyl, said alkyl, Aryl, Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

$R^5$  is selected from the group consisting of:  $C_{1-10}$ alkyl, Aryl, Heteroaryl and Heterocyclyl, said alkyl, cycloalkyl, Aryl Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from  $R^6$ ;

when  $R^2$  represents  $C(O)C_{1-10}$ alkyl, each  $R^6$  is independently selected from the group consisting of: halo, Aryl, Heteroaryl, Heterocyclyl,  $OR^7$ ,  $SR^7$ ,  $S(O)_mR^8$ ,  $S(O)_2OR^8$ ,  $S(O)_mNR^7R^8$ ,  $NO_2$ ,  $NR^7R^8$ ,  $O(CR^9R^{10})_nNR^7R^8$ ,  $C(O)R^8$ ,  $CO_2R^7$ ,  $CO_2(CR^9R^{10})_nCONR^7R^8$ ,  $OC(O)R^8$ ,  $CN$ ,  $C(O)NR^7R^8$ ,  $NR^7C(O)R^8$ ,  $OC(O)NR^7R^8$ ,  $NR^7C(O)OR^8$ ,  $NR^7C(O)NR^8R^9$ ,  $CR^7(NOR^8)$ ,  $(CR^9R^{10})_n$ -Aryl,  $(CR^9R^{10})_n$ -Heteroaryl,  $(CR^9R^{10})_n$ -Heterocyclyl,  $CF_3$  and  $OCF_3$ ,

and when  $R^2$  is  $C(O)Aryl$ ,  $C(O)Heteroaryl$  or  $C(O)Heterocyclyl$ , and when  $R^6$  is a substituent on  $R^3$ ,  $R^4$  and  $R^5$ , each  $R^6$  is independently selected from the group consisting of halo,  $C_{1-7}$ alkyl, Aryl, Heteroaryl, Heterocyclyl,  $OR^7$ ,  $SR^7$ ,  $S(O)_mR^8$ ,  $S(O)_2OR^8$ ,  $S(O)_mNR^7R^8$ ,  $NO_2$ ,  $NR^7R^8$ ,  $O(CR^9R^{10})_nNR^7R^8$ ,  $C(O)R^8$ ,  $CO_2R^7$ ,  $CO_2(CR^9R^{10})_nCONR^7R^8$ ,  $OC(O)R^8$ ,  $CN$ ,  $C(O)NR^7R^8$ ,  $NR^7C(O)R^8$ ,  $OC(O)NR^7R^8$ ,  $NR^7C(O)OR^8$ ,  $NR^7C(O)NR^8R^9$ ,  $CR^7(NOR^8)$ ,  $(CR^9R^{10})_n$ -Aryl,  $(CR^9R^{10})_n$ -Heteroaryl,  $(CR^9R^{10})_n$ -Heterocyclyl,  $CF_3$  and  $OCF_3$ ;

wherein m is 0, 1 or 2 and n is an integer from 1 to 7, and the alkyl, Heterocyclyl, Aryl and Heteroaryl groups and portions are optionally substituted with 1-4 substituents selected from a group independently selected from  $R^{11}$ ;

$R^7$ ,  $R^9$  and  $R^{10}$  are independently selected from the group consisting of: H,  $C_{1-7}$ alkyl, Aryl, Ar- $C_{1-10}$ alkyl and mono-, di- and tri- halo substituted Ar- $C_{1-10}$ alkyl,

or one R<sup>9</sup> and one R<sup>10</sup> are taken together with the atoms to which they are attached and any intervening atoms and represent a ring of 3 to 8 members containing 0-2 heteroatoms independently selected from O, S and N;

R<sup>8</sup> is selected from the group consisting of: C<sub>1-10</sub> alkyl, Aryl and C<sub>1-10</sub>alkyl-Aryl;

and

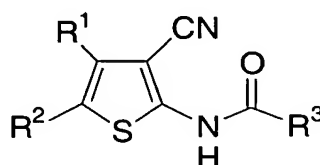
R<sup>11</sup> is selected from the group consisting of: halo, CN, C<sub>1-4</sub>alkyl, Aryl, CF<sub>3</sub> and

OH

said compound bein administered in an amount that is effective to prevent or delay the onset of type 2 diabetes mellitus.

16. A method of treating, preventing or delaying the onset of a disease or condition in a type 2 diabetes mellitus patient, said disease or condition being selected from the group consisting of: dyslipidemia selected from elevated serum cholesterol, elevated serum triglycerides, elevated serum low density lipoproteins and low levels of serum high density lipoprotein, microvascular or macrovascular changes and the sequellae of such conditions selected from coronary heart disease, stroke, peripheral vascular disease, hypertension, renal hypertension, nephropathy, neuropathy and retinopathy,

said method comprising administering to the type 2 diabetic patient a compound of formula I:



I

or a pharmaceutically acceptable salt or solvate thereof wherein:

R<sup>1</sup> is selected from the group consisting of: H, C<sub>1-10</sub>alkyl, Aryl, Heteroaryl and Heterocyclyl,

said alkyl, Aryl, Heteroaryl and Heterocyclyl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

R<sup>2</sup> is selected from the group consisting of: H, C<sub>1-10</sub> alkyl, C(O)C<sub>1-10</sub> alkyl, C(O)Aryl, C(O)Heteroaryl, C(O)Heterocyclyl CO<sub>2</sub>R<sup>4</sup> and C(O)NR<sup>4</sup>R<sup>5</sup>,

the alkyl, Aryl, Heteroaryl and Heterocyclyl portions of C(O)C<sub>1-10</sub>alkyl, C(O)Aryl, C(O)Heteroaryl and C(O)Heterocyclyl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

R<sup>3</sup> is selected from the group consisting of: C<sub>1-10</sub>alkyl and Aryl, said alkyl and Aryl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

R<sup>4</sup> is selected from the group consisting of: H, C<sub>1-10</sub>alkyl, Aryl, Heteroaryl, Heterocyclyl, said alkyl, Aryl, Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

R<sup>5</sup> is selected from the group consisting of: C<sub>1-10</sub>alkyl, Aryl, Heteroaryl and Heterocyclyl, said alkyl, cycloalkyl, Aryl Heteroaryl, and Heterocyclyl being optionally substituted with one to four substituents independently selected from R<sup>6</sup>;

when R<sup>2</sup> represents C(O)C<sub>1-10</sub>alkyl, each R<sup>6</sup> is independently selected from the group consisting of: halo, Aryl, Heteroaryl, Heterocyclyl, OR<sup>7</sup>, SR<sup>7</sup>, S(O)<sub>m</sub>R<sup>8</sup>, S(O)<sub>2</sub>OR<sup>8</sup>, S(O)<sub>m</sub>NR<sup>7</sup>R<sup>8</sup>, NO<sub>2</sub>, NR<sup>7</sup>R<sup>8</sup>, O(CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>NR<sup>7</sup>R<sup>8</sup>, C(O)R<sup>8</sup>, CO<sub>2</sub>R<sup>7</sup>, CO<sub>2</sub>(CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>CONR<sup>7</sup>R<sup>8</sup>, OC(O)R<sup>8</sup>, CN, C(O)NR<sup>7</sup>R<sup>8</sup>, NR<sup>7</sup>C(O)R<sup>8</sup>, OC(O)NR<sup>7</sup>R<sup>8</sup>, NR<sup>7</sup>C(O)OR<sup>8</sup>, NR<sup>7</sup>C(O)NR<sup>8</sup>R<sup>9</sup>, CR<sup>7</sup>(NOR<sup>8</sup>), (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Aryl, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Heteroaryl, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Heterocyclyl, CF<sub>3</sub> and OCF<sub>3</sub>,

and when R<sup>2</sup> is C(O)Aryl, C(O)Heteroaryl or C(O)Heterocyclyl, and when R<sup>6</sup> is a substituent on R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup>, each R<sup>6</sup> is independently selected from the group consisting of halo, C<sub>1-7</sub>alkyl, Aryl, Heteroaryl, Heterocyclyl, OR<sup>7</sup>, SR<sup>7</sup>, S(O)<sub>m</sub>R<sup>8</sup>, S(O)<sub>2</sub>OR<sup>8</sup>, S(O)<sub>m</sub>NR<sup>7</sup>R<sup>8</sup>, NO<sub>2</sub>, NR<sup>7</sup>R<sup>8</sup>, O(CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>NR<sup>7</sup>R<sup>8</sup>, C(O)R<sup>8</sup>, CO<sub>2</sub>R<sup>7</sup>, CO<sub>2</sub>(CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>CONR<sup>7</sup>R<sup>8</sup>, OC(O)R<sup>8</sup>, CN, C(O)NR<sup>7</sup>R<sup>8</sup>, NR<sup>7</sup>C(O)R<sup>8</sup>, OC(O)NR<sup>7</sup>R<sup>8</sup>, NR<sup>7</sup>C(O)OR<sup>8</sup>, NR<sup>7</sup>C(O)NR<sup>8</sup>R<sup>9</sup>, CR<sup>7</sup>(NOR<sup>8</sup>), (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Aryl, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Heteroaryl, (CR<sup>9</sup>R<sup>10</sup>)<sub>n</sub>-Heterocyclyl, CF<sub>3</sub> and OCF<sub>3</sub>;

wherein m is 0, 1 or 2 and n is an integer from 1 to 7, and the alkyl, Heterocyclyl, Aryl and Heteroaryl groups and portions are optionally substituted with 1-4 substituents selected from a group independently selected from R<sup>11</sup>;

R<sup>7</sup>, R<sup>9</sup> and R<sup>10</sup> are independently selected from the group consisting of: H, C<sub>1-7</sub>alkyl, Aryl, Ar-C<sub>1-10</sub>alkyl and mono-, di- and tri- halo substituted Ar-C<sub>1-10</sub>alkyl,

or one R<sup>9</sup> and one R<sup>10</sup> are taken together with the atoms to which they are attached and any intervening atoms and represent a ring of 3 to 8 members containing 0-2 heteroatoms independently selected from O, S and N;

R<sup>8</sup> is selected from the group consisting of: C<sub>1-10</sub> alkyl, Aryl and C<sub>1-10</sub>alkyl-Aryl; and

R<sup>11</sup> is selected from the group consisting of: halo, CN, C<sub>1-4</sub>alkyl, Aryl, CF<sub>3</sub> and OH.

5 said compound being administered in an amount that is effective for treating, preventing or delaying the onset of such disease or condition.

17. A compound selected from the group consisting of:  
tert-butyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-carboxylate;  
tert-butyl 4-cyano-5-[(cyclobutylcarbonyl)amino]-3-methylthiophene-2-  
10 carboxylate;  
tert-butyl 4-cyano-5-[(cyclopentylcarbonyl)amino]-3-methylthiophene-2-  
carboxylate;  
tert-butyl 4-cyano-5-[(cyclohexylcarbonyl)amino]-3-methylthiophene-2-  
carboxylate;  
15 tert-butyl 4-cyano-5-(isobutyrylamino)-3-methylthiophene-2-carboxylate;  
tert-butyl 4-cyano-5-[(2,2-dimethylpropanoyl)amino]-3-methylthiophene-2-  
carboxylate;  
benzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-carboxylate;  
2-chlorobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
20 carboxylate;  
3-chlorobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
carboxylate;  
4-chlorobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
carboxylate;  
25 2-cyanobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
carboxylate;  
3-cyanobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
carboxylate;  
4-cyanobenzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
30 carboxylate;  
2-naphthylmethyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-  
carboxylate;  
3-(trifluoromethyl)benzyl 4-cyano-5-[(2-ethylbutanoyl)amino]-3-  
methylthiophene-2-carboxylate;

N-benzyl-4-cyano-N-ethyl-5-[(2-ethylbutanoyl)amino]-3-methylthiophene-2-carboxamide;  
 4-cyano-N-cyclopentyl-5-[(2-ethylbutanoyl)amino]-N-(4-fluorobenzyl)-3-methylthiophene-2-carboxamide;  
 5 N-benzyl-4-cyano-5-[(2-ethylbutanoyl)amino]-N,3-dimethylthiophene-2-carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-N,N,3-trimethylthiophene-2-carboxamide;  
 N-benzyl-4-cyano-5-[(2-ethylbutanoyl)amino]-N-isopropyl-3-methylthiophene-2-carboxamide;  
 10 4-cyano-5-[(2-ethylbutanoyl)amino]-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]-3-methyl-N-(2-naphthylmethyl)thiophene-2-carboxamide;  
 N-(tert-butyl)-4-cyano-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-naphthylmethyl)thiophene-2-carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-naphthylmethyl)-N-(1,2,2-trimethylpropyl)thiophene-2-carboxamide;  
 15 4-cyano-N-cyclopentyl-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-naphthylmethyl)thiophene-2-carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-3-methyl-N-(2-naphthylmethyl)-N-(1,2,3,4-tetrahydronaphthalen-1-yl)thiophene-2-carboxamide;  
 20 N-(tert-butyl)-4-cyano-5-[(2-ethylbutanoyl)amino]-N-(4-fluorobenzyl)-3-methylthiophene-2-carboxamide;  
 4-cyano-5-[(2-ethylbutanoyl)amino]-N-(4-fluorobenzyl)-3-methyl-N-(1,2,2-trimethylpropyl)thiophene-2-carboxamide;  
 4-cyano-N-(2,4-dichlorobenzyl)-5-[(2-ethylbutanoyl)amino]-N-isopropyl-3-methylthiophene-2-carboxamide, and  
 25 N-{3-cyano-4-methyl-5-[(4-phenylpiperidin-1-yl)carbonyl]thien-2-yl}-2-ethylbutanamide, and the pharmaceutically acceptable salts and solvates of the compounds listed above.